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A revision of *Anacharoides* Cameron, 1904 (Hymenoptera, Figitidae) with a description of a new species

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Abstract

Anacharoides Cameron is revised and six species are recognized: *A. nicknacki* Buffington & van Noort, **sp. n.**, *A. pallida* Quinlan, *A. paragi* Benoit, *A. quadrus* Quinlan, *A. striaticeps* Cameron and *A. stygius* Benoit. A key to species is provided. *Anacharoides striaticeps* was determined to be a variable species, and consequently a number of names have been proposed for this species. Here we clarify the identity of *A. striaticeps* and provide evidence for the following new synonymies of *A. striaticeps*: *Anacharoides elongaticornis* Benoit, **syn. n.**, *Anacharoides eurytergis* Benoit, **syn. n.**, *Anacharoides decellius* Quinlan, **syn. n.**, *Anacharoides sanitas* Quinlan, **syn. n.**, *Anacharoides nigra* Quinlan, **syn. n.**, *Anacharoides arcus* Quinlan, **syn. n.**, *Anacharoides suspensus* Quinlan, **syn. n.**. The holotype of *Anacharoides rufa* (Kieffer) is lost; examination of a specimen possibly determined by Kieffer from 1913 housed in the Museum is conspecific with *A. pallida*, but no nomenclature action is pursued at this time. The **syn. n.** of *A. astrida* Quinlan with *A. quadrus* is also hypothesized. Definitive host records for the genus, based on isolated puparia, are reported to be the syrphids *Ischiodon* Sack and *Paragus* Latreille. Species of this genus of figitid wasp are endemic to sub-Saharan Africa, Madagascar, the southern Arabian Peninsula and the Canary Islands. Images of all species contained within this paper are available from http://morphbank.net. An online Lucid interactive key to species of *Anacharoides* and images are available at http://www.waspweb.org/Cynipoidea/Figitidae/Aspicerinae/Anacharoides/index.htm.

Keywords

Aspicerinae, genus revision, species revision, host record, Syrphidae

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Introduction

The Aspicerinae (Hymenoptera: Figitidae) are a cosmopolitan group of figitids largely parasitic on Syrphidae (Diptera) (Ronquist 1999; Buffington et al. 2007). Weld (1952) included the following genera within Aspicerinae: *Anacharoides* Cameron, *Aspicera* Dalhbom, *Balna* Cameron, *Callaspidia* Dalhbom, *Omalaspis* Giraud, *Paraspicera* Kieffer and *Prosaspicera* Kieffer. *Pujadella* Ros-Farré was recently described in Aspicerinae (Ros-Farré 2007), adding one additional genus to the subfamily. Buffington et al. (2007) also included species of *Melanips* in Aspicerinae; species in this group are parasitoids of Chamaemyiidae larvae (Ronquist 1999; Buffington et al. 2007). *Melanips* has been somewhat of a problematic taxon with respect to placement within Figitidae (Ronquist 1999), but through phylogenetic analysis, the genus is consistently allied with the rest of the Aspicerinae with high branch support (Buffington et al. 2007).

Anacharoides Cameron, 1904, was based on the type species *A. striaticeps* Cameron (by monotypy). Benoit (1956) and Quinlan (1979) increased the number of described species substantially and broadened our knowledge of the distribution of species within this genus. Species of this genus appear to be restricted to sub-Saharan Africa, Madagascar and southern Arabian Peninsula (Cameron 1904; Weld 1952; Benoit 1956; Quinlan 1979; present study).

Phylogenetically, *Anacharoides* is nested deeply within Aspicerinae, the sister-group to *Callaspidia* (Buffington et al. 2007). In the key provided by Ros-Farré (2007), *Anacharoides* occurs in the same couplet as *Pujadella*, suggesting, at the very least, that species in these two genera share a number of similar characters and character states. Buffington et al. (2007) were unable to include *Pujadella* in their analysis since the taxon had not yet been described; a follow-up analysis should prove useful to understanding the relationship of these two genera. Though few definitive host records exist for species of *Anacharoides*, their phylogenetic position ((*Aspicera*+*Paraspicera*)*Anacharoides*(*Omalaspis*+*Callaspidia*)) supports the hypothesis that all species are parasitoids of Syrphidae, because species of both *Aspicera* and *Callaspidia* are known to parasitize this group (Ronquist 1999; Ros-Farré 2007; Buffington et al. 2007). *Anacharoides*, *Callaspidia*, *Omalaspis*, and *Pujadella* all lack posterior projections from the mesoscutellum (Weld 1952; Ros-Farré 2007); instead, members of these genera possess an array of morphological diversity on the dorsum of the scutellum. These features are reviewed by Ros-Farré (2007) and below under the *Diagnosis* section.

Intensive collecting efforts by one of us (SVN) yielded numerous specimens from throughout South Africa and the Central African Republic. When these specimens were examined and critically evaluated for placement in species-level groups within *Anacharoides*, it quickly became clear that the genus and its currently described species needed re-evaluation. A large series loaned to us from The Natural History Museum (BMNH) provided the necessary means to assess intraspecific variation of several putative species, which also revealed an undescribed species of *Anacharoides*. The purpose of this paper is to revise all species of *Anacharoides*, produce an updated key to species based on more reliable and readily diagnosable characters, and supplement the key and the descriptions/redescriptions with high-resolution digital color images.

Materials and methods

Morphological terminology follows that of Ronquist and Nordlander (1989) and Fontal-Cazalla et al. (2002); cuticular surface terminology follows Harris (1979). The species descriptions are generated by a database application, vSysLab (Johnson 2008), designed to facilitate the generation of taxon by character data matrices and to export the data both as text and as input files for other applications. Antennal descriptions are based on flagellomere counts where flagellomere 1 is antennal segment 3 counting from base at the head; flagellomere counts follow the following format: F1, F2–F12 = flagellomere 1, 2–12. At the end of each species treatment are comments concerning that taxon. Specimen label data for types and non-types are reported 'as is' on the label; comments by the authors are in brackets, '[...]'.

Specimens were examined using either a Wild M-5 or a Leica M-10 stereomicroscope with incandescent and fluorescent light sources. Images for plates were acquired through an EntoVision micro-imaging system. This system included a Leica M16 or Leica DRMB compound microscope with an attached JVC KY-75U 3-CCD digital video camera or a GT-Vision Lw11057C-SCI digital camera that fed image data to a notebook or desktop computer. The program Cartograph 5.6.0 was then used to merge an image series (typically representing 30 focal planes) into a single in-focus image. Lighting was achieved using techniques summarized in Buffington et al. (2005), Kerr et al. (2009) and Buffington and Gates (2009). All images presented in this paper are freely available through http://www.morphbank.net where a collection of images has been created for each species; the collection number is found at the end of the species treatment above *Comments*. Images are also found on WaspWeb: http://www.waspweb.org/Cynipoidea/Figitidae/Aspicerinae/Anacharoides/index.htm.

Examination of species of *Anacharoides* requires careful attention to illumination and specimen angle. The combination of dense setae, micro/macro sculpturing, and occasionally translucent cuticle result in several 'cryptic' characters and character states. We suggest the use of fluorescent illumination sources for intense yet dispersed light; rotation of the specimen within this light will reveal ridges and carinae that from some angles are indistinct to absent. We have tried to focus exclusively on readily diagnosable features, but for some species, this was not possible.

List of depositories:

BMNH The Natural History Museum, London. (D. Notton)
CASC California Academy of Sciences, San Francisco. (B. Zuparko)
MNHN Muséum National d'Histoire Naturelle, Paris. (C. Villemant)
MRAC Musée Royale de l'Afrique Centrale, Tervuren, Belgium (G. Gryseels)
SAMC Iziko South African Museum, Cape Town. (S. van Noort)
SANC South African National Collection of Insects, Pretoria, South Africa (G. Prinsloo)
TAMU Entomology Museum, Dept. of Entomology, Texas A&M University, College Station, TX (E. Riley)

UCDC UC Davis, R.M. Bohart Museum of Entomology, Davis, CA. (S. Heydon)
UCRC UC Riverside, Entomology Research Museum, Riverside, CA. (D. Yanega)
USNM National Museum of Natural History, Washington, D.C. (M. Buffington)

Anacharoides Cameron

Anacharoides Cameron, 1904.Type species: *Anacharoides striaticeps* Cameron, 1904, by original designation and monotypy.
Coelonychia Kieffer, 1910. Type species: *Coelonychia spinosipes* Kieffer, by monotypy. Synonymy by Weld (1930).

Diagnosis. Species of this genus are immediately separable from all other Figitidae by the distinctive scutellar depression bounded by a pair of sharp, postero-dorsal triangular projections (Figs 1–4). The elongate petiole is somewhat variable within Aspicerinae, though the state in *Anacharoides* is longer than in most other genera. The only two taxa *Anacharoides* can be confused with are *Callaspidia* and *Pujadella*; both of these latter genera have mesoscutal sculpturing that is remininscent of *Anacharoides*; however, close examination of the scutellar morphology easily separates these taxa.

Redescription. *Color*. Body ruddy brown to black (Figs 1–4), older specimens tending toward orange; antennae yellowish–orange basally, dark brown or black apically; legs yellowish–orange to dark brown; wings clear.

Head. Entire anterior surface coriaceous to rugulose, densely setose; ocellar ridge well developed, simple to rugulose, connecting lateral ocelli dorsal of central ocellus; area posterior of ocellar ridge microcoriaceous to shagreened; orbital furrows complete from inner margin of lateral ocellus to ventral margin of eye; torulus raised to form distinct collar, strigate, ventrally lobed along lateral edge of midpit of frons; midpit of frons densely setose (solid white in most specimens); area between anterior tentorial pits slightly raised, clypeus indistinct from lower frons, malar sulcus indistinct. Genal region setose, entirely porcate, lines connecting posterior margin of eye with genal carina; genal carina well developed, extended to anterior surface of pronotum; posterior surface of head concave on outer edges, flat centrally, distinctly strigose with strigae encircling occipital foramen. Antenna in female with 11 flagellomeres, 12 flagellomeres in males; female F1 nearly cylindrical, expanded slightly apically; male F1 variously modified, ranging from nearly cylindrical, slightly bent outwardly mid-length to strongly assymetical, apically expanded, distinctly bent outwardly mid-length.

Mesosoma. Pronotal plate as wide as mesosoma when viewed antero-dorsally, outer flanges flared, meeting posterior margin of head mesal of genal carina; anterior and posterior margins of plate divided by large fovea set with 'foamy' setae; posterior margin of plate distinctly concave along anterior margin of mesoscutum; lateral aspect of pronotum setose, porcate antero-dorsally and antero-ventrally, gently carinate anteromedially, posterior region of sclerite coriaceous to shagreened (Fig. 2B). Tegula and upper anterior part of mesopleural triangle smooth, glabrous; posterior margin of up-

per part of mesopleural triangle spatulate, covering base of hind wing; mesopleural triangle deeply inset into mesopleuron, densely setose; ventral 2/3 of mesopleuron glabrous, smooth; mesopleural carina reduced to short, straight ridge on anterior 1/3 of sclerite; setal patch present on postero-ventral corner of mesopleuron; latero-ventral mesopleural carina distinct. Metapectal-propodeal complex densely setose; metapectus bounded on all sides by distinct pleural ridge; upper metapleural sclerite and episternum bisected medially by distinct pleural carina; spiracular groove present, densely

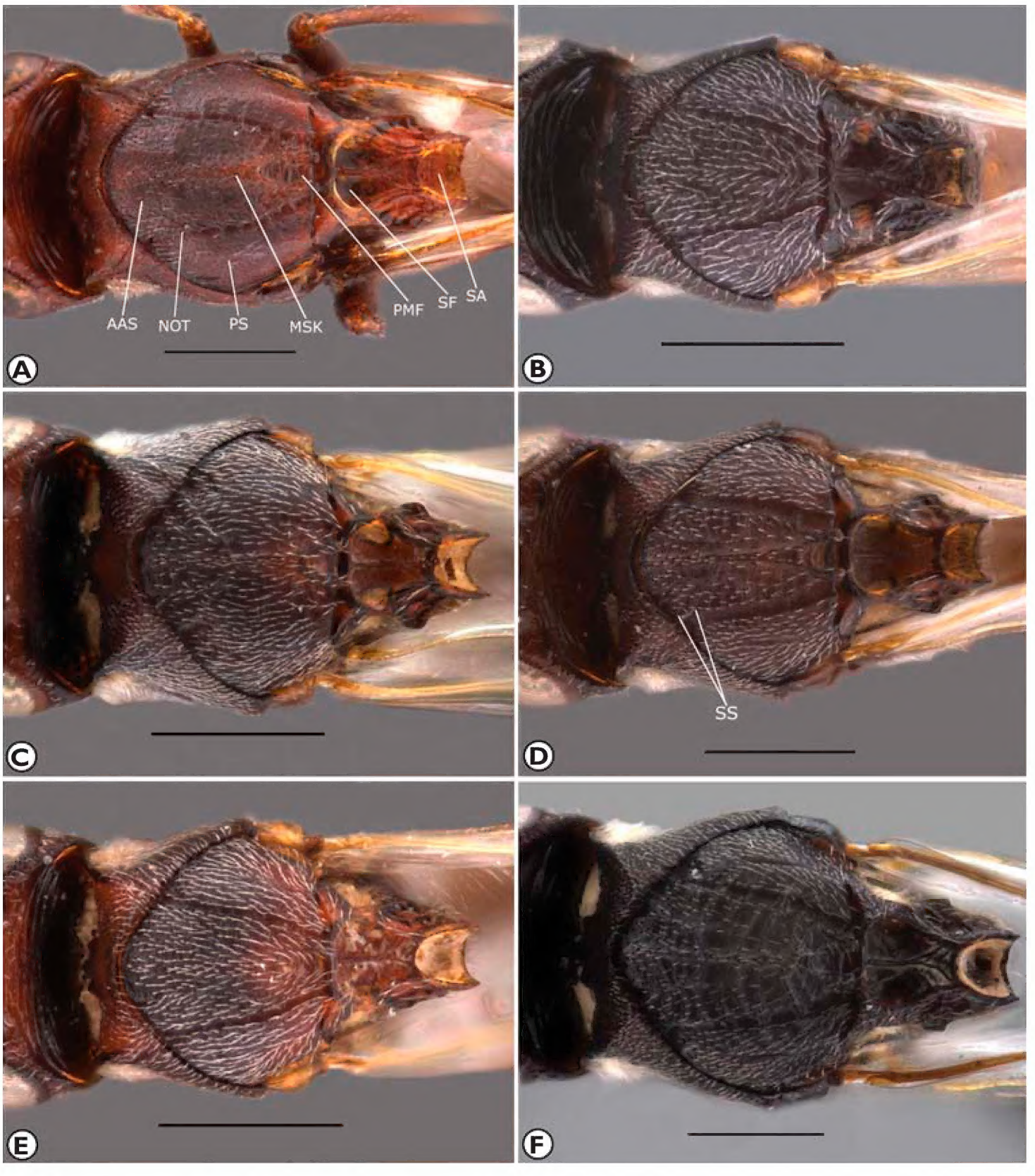


Figure 1 Mesoscutum of *Anacharoides* species **A** *A. pallida* **B** *A. nicknacki* sp. n. **C** *A. paragi* **D** *A. quadrus* **E** *A. striaticeps* **F** *A. stygius*. Abbreviations: AAS, antero-admedial signum; NOT, notaulus; MSK, mesoscutal keel; PMF, postero-mesoscutal fovea; PS, parapsidal signum; SA, scutellar acetabulum; SF, scutellar fovea; SS, antero-admedial signum strut. All scale bars equal 0.5 mm.

Figure 2 Head and mesosoma **A** *Anacharoides nicknacki* sp. n. **B** *Anacharoides pallida*.

Figure 3 Head and mesosoma **A** *Anacharoides paragi* **B** *Anacharoides quadrus*.

Figure 4 Head and mesosoma: **A** *Anacharoides striaticeps* **B** *Anacharoides stygius*.

setose, bounded posteriorly by pleural carina. Propodeum compact, not extended posteriorly; propodeal carinae parallel, auxillary propodeal carina present, meeting propodeal carina at metanotum, continuing to posterior margin of episternum, terminating in dense setal patch; area between propodeal carinae smooth with dense patch of setae located in center; nucha circular, thin. Lateral aspects of metanotum densely setose, medial posterior face of metanotum modified completely smooth, glabrous, shield-like. Mesoscutum variously sculptured, ranging from completely shagreened (Fig. 1A) to strigate (Fig. 1F); antero-admedial signum present (AAS, Fig. 1A); antero-admedial signum struts present (Fig. 1D) to absent (Fig. 1A); mesoscutal keel always present posteriorly (MSK, Fig. 1A), present to absent anteriorly; inter antero-admedial signum ridges present to absent; notauli present (NOT, Fig. 1A), width constant to distinctly widened posteriorly, frequently interrupted by ridges, smooth to crenulate; parapisidal signum (PS, Fig. 1A) present, reduced in some species; posterior mesoscutal fovea present (PMF, Fig. 1A), ranging from short to medium-long, extending to posterior terminus of mesoscutal keel; posterior aspect of mesoscutellar fovea glabrous, ranging from smooth to strigate, anteriorly becoming coriaceous, setose. Scutellum with two distinct, large scutellar foveae, separated by median carina of scutellum, bounded laterally by distinct ridge; scutellar acetabulum present (SA, Fig. 1A), large, bounded on all sides by distinct ridge; postero-lateral corners of scutellar acetabulum with raised posteriorly directed triangular projections; lateral and posterior aspects of scutellum areolate-rugose; dorsal axillular area shagreened, axillula deeply impressed, setose, with distinct circular impression present anteriorly.

Wings. Clear, nearly glabrous except for few scattered, short, setae; apical fringe absent; R_1 incomplete, not reaching anterior margin of wing; RS_2 complete, reaching anterior margin of wing, turning slightly at terminus with wing margin towards apex of wing; wing veins very light yellow, clear in some specimens.

Legs. All coxae with distinct patch of setae on anterior and posterior faces; pro- and mesocoxae subequal in size; metacoxa 3–4 times as large (width and length); metacoxa with posterior impression to receive femora when folded; metatibia with posterior, mesal, distal ridges, lined with stout setae.

Metasoma. Petiole elongate, ranging from 3–6× longer than wide, glabrous, smooth to slightly carinate dorsally, distinctly strigate laterally, flanged anteriorly at junction with nucha, posteriorly obscured by tergum 1; tergum 1 reduced, ligulate, central anterior area with distinctly round setal patch; tergum 2 largest, 8× larger than tergum 1, terga 3–9 telescoped within tergum 2; micropores present on posterior 2/3 of tergum 2 and terga 3–9.

Distribution. (Fig. 6) *Sub-Saharan Africa*: Senegal, Sierra Leone, Nigeria, Eritrea, Cameroon, Central African Republic, Democratic Republic of Congo, Uganda, Rwanda, Kenya, Madagascar, Malawi, Zimbabwe and South Africa. *Arabian Peninsula*: Yemen. *Palearctic region*: Canary Islands.

Biology. Species of *Anacharoides*, along with other Aspicerinae, have been associated with syrphid hosts (Buffington et al. 2007; Quinlan 1979). The two species recorded herein were reared from the syrphids *Ischiodon* Sack and *Paragus* Latreille (based on isolated host puparia identified by F. C. Thompson of the Smithsonian Institution).

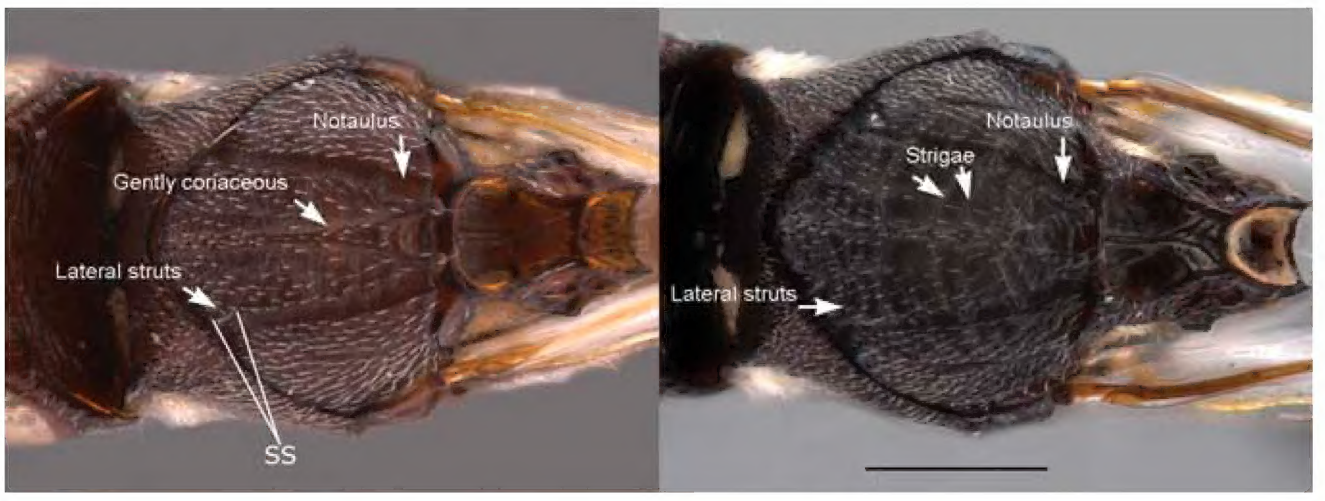
Image collection: 467386.

Comments. Several autapomorphies distinguish *Anacharoides* from any other figitid genus. The width of the pronotal plate and the interaction of this structure with the posterior margin of the head is similar to the state found in zaeucoiline eucoilines (Buffington 2009), and appear to have evolved in parallel. The function of this morphological feature is currently unknown. The sculpture of the mesoscutum, as well as the unusual scutellar fovea, make members of this genus readily recognizable. Finally, the species within the genus are united by an unusually long petiole, a state remarkably similar to that found in *Anacharis* and *Xyalophora* (Anacharitinae), and likely the root behind the name *Anacharoides*.

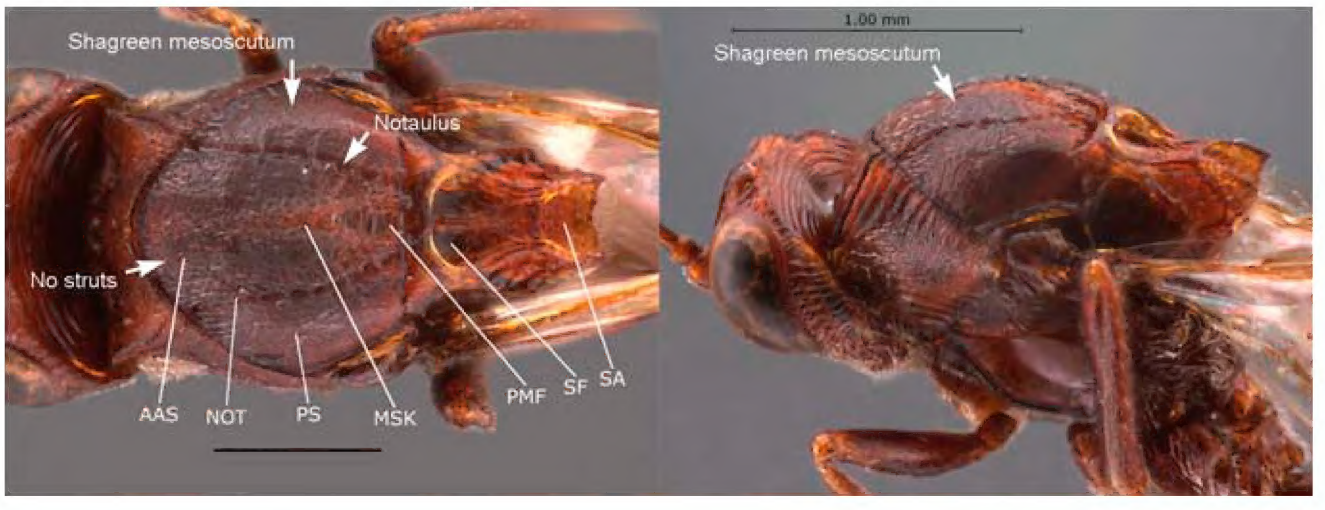
Key to species of *Anacharoides*

Online Lucid interactive keys are available at: http://www.waspweb.org/Cynipoidea/Keys/index.htm

1 Mesoscutum variously sculptured, usually coriaceous, with or without rugae or strigae; notauli distinctly wider posteriorly than anteriorly; anterior admedial signum with one or more lateral struts present **2**



– Mesoscutum entirely shagreened, no distinctive rugae or strigae present (at most, with very slight wrinkles); notauli the same width across entire expanse of mesoscutum; anterior admedial signum lacking any lateral struts..... ..... ***Anacharoides pallida*** **Quinlan**

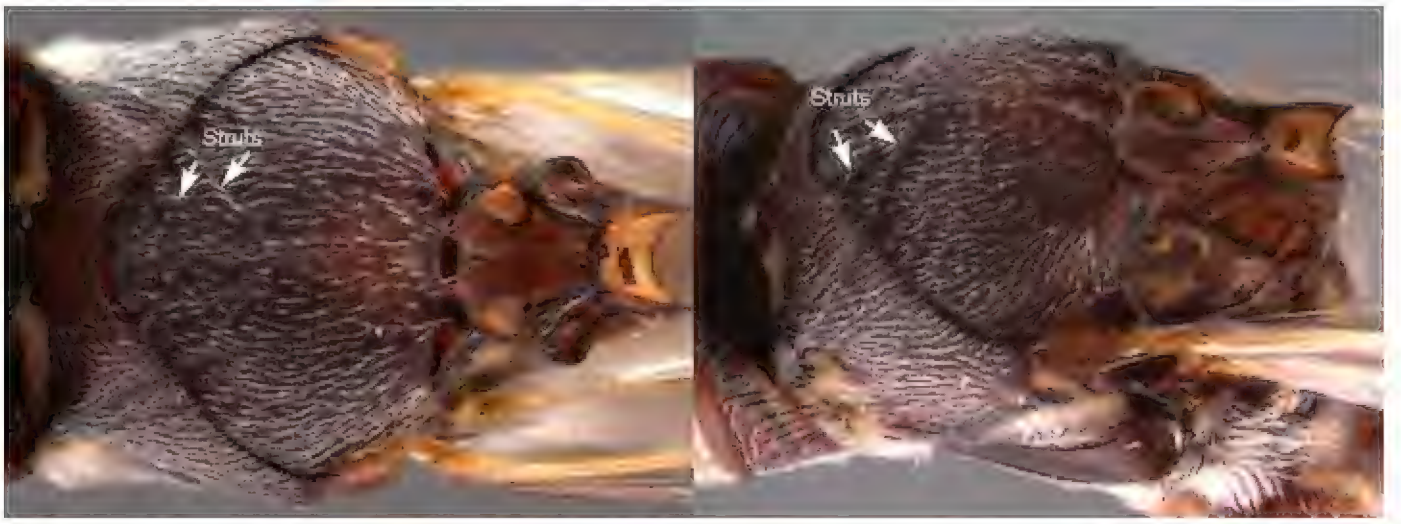


2 Central mesoscutum coriaceous to shagreened and gently wrinkled, no rugae or strigae **3**

– Central mesoscutum shagreened without gentle wrinkles, but instead with random, concentrated rugae or distinct, large strigae **4**

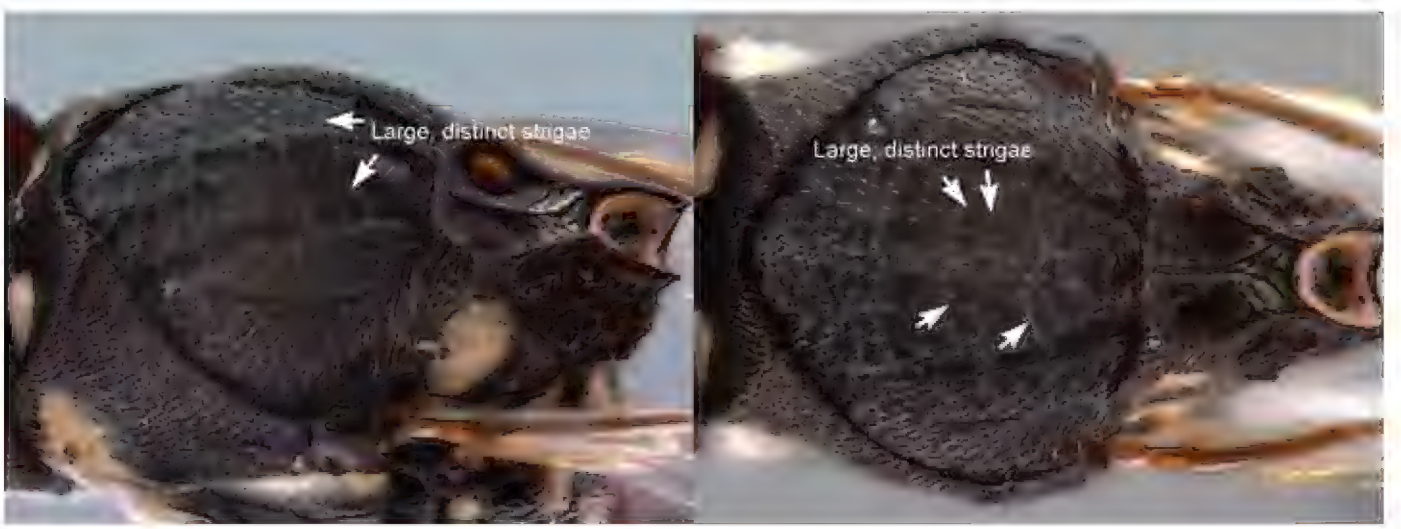
3 Two to three distinct anterior admedial signum struts present on anterior of mesoscutum, typically one major strut posteriorly, one minor one anteriorly (at margin of pronotum) and often a third, faint strut between these aforementioned struts; F1 of female antenna at most 1.5 × length of F2..... ..... ***A. quadrus*** **Quinlan**

– At most two distinct anterior admedial signum struts present; typically one major strut posteriorly and one very small minor one anteriorly; F1 of female antenna nearly 2 × length of F2 ..... ***A. paragi*** **Benoit**



4 Central mesoscutum variously rugose-strigate, with no distinct ridges dominating the surface..... **5**

– Central mesoscutum dominated by 4–5 distinct strigae radiating from the mesoscutal keel ..... ***A. stygius*** **Benoit**



5 Antero-admedial signum struts distinctly larger than all other mesoscutal rugae; inter antero-admedial signum ridges absent; male antennal F1 nearly cylindrical, slightly kinked at midpoint, not excavated laterally..... .....***A. nicknacki*** **Buffington & van Noort, sp. n.**

– Antero-admedial signum struts indistinct from all other mesoscutal rugae; inter antero-admedial signum ridges present; male antennal F1 distinctly expanded apically, strongly excavated laterally .....***A. striaticeps*** **Cameron**

Description and redescription of species

Anacharoides nicknacki **Buffington & van Noort, sp. n.**
urn:lsid:zoobank.org:act:BF0D4EE2-9D8F-4368-8DAB-4EA50514F91E
Figs 1A, 4A, 5A, and 7

Diagnosis. Similar to *A. striaticeps*, but differing in the development of the antero-admedial signum struts: *A. striaticeps* has these poorly developed, blending in with the rest of the mesoscutal sculpturing (Fig. 1E); further differentiation requires males, in which the F1 of the male antenna is deeply excavated in *A. striaticeps* (Fig. 5B); in *A.*

Figure 5 Male antennae **A** *A. nicknacki* sp. n. **B** *A. striaticeps*.

nicknacki the male F1 is not excavated (Fig. 5A). *A. nicknacki* is differentiated from all other *Anacharoides* in lacking multiple antero-admedial signum struts per side (at least two per side in *A. paragi* and *A. quadrus*), by lacking strigae on the mesoscutum (present in *A. stygius*) and by not having the central area of the mesoscutum shagreened (shagreened in *A. pallida*).

Description. Length = 2.25–3.00 mm, n=65; holotype length = 2.50 mm. F1 of female cylindrical. F1 of male nearly cylindrical, slightly kinked at mid-point, not excavated laterally. Length of F1 of female antenna 1.4–1.5 × F2. Ocellar groove present, crenulate ridge posterior to central ocellus. Lateral aspect of pronotum porcate antero-ventrally, gently carinate antero-dorsally, remainder of sclerite shagreened. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present with 1 antero-admedial signum strut. Inter antero-admedial signum ridges present. Surface of mesoscutum generally rugulose over entire surface, no strigae present. Shape of posterior mesoscutellar fovea triangular to sub-triangular. Mesoscutal keel present, reduced anteriorly. Mesoscutellar fovea smooth with 3–4 carinae present anteriorly, smooth posteriorly. Mesoscutellum in lateral view with a slight hump. Length of posterior mesoscutellar fovea short, comprising less than 1/5 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli coriaceous-rugose with weak carinae posteriorly. Sculpture of notauli crenulate with transverse ridges posteriorly. Anterior margin of scutellar fovea rounded. Shape of notauli distinctly wider at posterior margin than anterior margin.

Distribution (Fig. 7). *Sub-Saharan Africa*: Cameroon, Kenya, Malawi, Rwanda, South Africa, Uganda and Zimbabwe.

Material examined. HOLOTYPE. MALAWI: Kasungu, Mtunthama, V.1982, J. Feehan. The holotype is a male, laterally point mounted on the left side, in good condition deposited in BMNH.

Additional material. PARATYPES. CAMEROON: Nkoemvon, 1980, D. Jackson (1 female, BMNH); Nkvoemon, Mal. tr. I–II 1980, Ms. D. Jackson (1 female, BMNH). KENYA: Kakamega Forest, 18.XII.1970, A.E. Stubbs, B.M. 1972–211 (1 female, BMNH). MALAWI: Same data as for holotype (1 male, BMNH); Kasungu, Mtunthama, VIII.1982, J. Feehan (19 males, BMNH; 10 males, SAMC; 10 males, USNM); Kasungu, Mtunthama, V.1982, J. Feehan (13 males, BMNH); Kasungu, Mtunthama, IX.1982, J. Feehan (1 female, USNM). RWANDA: Env. Astrida, 1954/1955, 82, G. Foucart (1 male, BMNH). SOUTH AFRICA: Pondoland, Port St. John, V.15–21, 1923, S. Africa, R.E. Turner, Brit. Mus. 1923–332 (1 female, BMNH); Natal, Van Reenan, Drakensberg, 55–6500 ft., X.1926, S. Africa, R.E. Turner, Brit. Mus. 1926–461 (1 female, BMNH). UGANDA: Kibale National Park, Kanyawara, Makerere University Biological Field Station, 1587m, 0°33.408'N 30°22.603'E, 30.VII–5.VIII.2005, S. van Noort, UG05-M09, Malaise trap, degraded mid-altitude rainforest, SAM-HYM-P025022 (1 female, SAMC). ZIMBABWE: [Rhodesia] Salisbury, A. Watsham [no other data available] (1 male, BMNH).

Figure 6 Distribution map of all *Anacharoides* species.

Etymology. Named in honor of Francisco Scaramanga's deadly butler and henchman *Nick Nack* in the James Bond movie *The Man with the Golden Gun* (United Artists, 1974). The name refers to the diminutive size of this species relative to other species of *Anacharoides.*

Biology. Unknown.

Image collection: 465354

Comments. This species is similar to *A. striaticeps* and is most likely a close relative. Though the distinction between *A. striaticeps* and *A. nicknacki* based on the antero-admedial signum struts is slight, it is very consistent; this distinction between these species is further supported by the character state of the antennal F1 in males (Fig. 5).

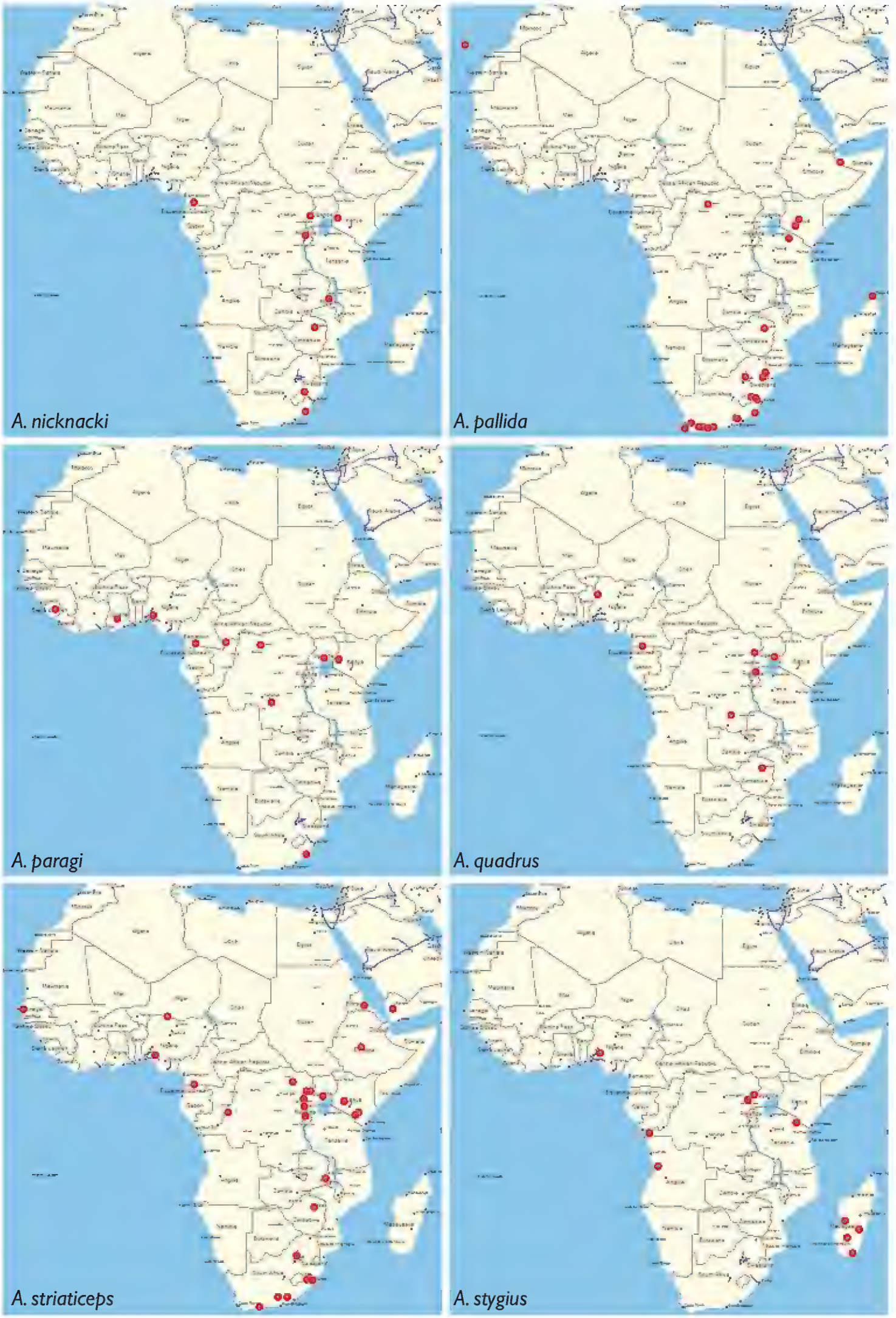


Figure 7 Distribution map, by species, throughout the African continent and Arabian Peninsula.

Anacharoides pallida Quinlan

Figs 1B, 2B and 7

Anacharoides pallida Quinlan, 1979: 100

Diagnosis. This is the only species of *Anacharoides* with a shagreened mesoscutum, entirely lacking rugae and/or strigae (Fig. 1A); all other species have much more substantial sculptural elements on the mesoscutum.

Redescription. Length = 3.10–3.80 mm, n=82; holotype length = 3.10 mm. F1 of female gradually expanded distally. F1 of male distinctly funicate, markedly kinked at midpoint, distinctly excavated. Length of F1 of female antenna 1.4–1.5 × F2. Ocellar groove present, simple ridge posterior to central ocellus. Lateral aspect of pronotum carinate antero-dorsally, smooth ventrally. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present, antero-admedial signum struts absent. Inter antero-admedial signum ridges absent. Surface of mesoscutum shagreened over entire surface. Shape of posterior mesoscutellar fovea triangular to sub-triangular. Mesoscutal keel present, reduced anteriorly. Mesoscutellar fovea smooth with 1–3 carinae present anteriorly, smooth posteriorly. Mesoscutellum in lateral view evenly rounded. Length of posterior mesoscutellar fovea medium-long, reaching 1/4 to 1/3 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli shagreened with faint carinae anteriorly. Sculpture of notauli smooth with transverse ridges posteriorly. Anterior margin of scutellar fovea rounded. Shape of notauli parallel sided across entire length of mesoscutum.

Distribution (Fig. 7). *Sub-Saharan Africa*: Democratic Republic of Congo, Kenya, Madagascar, Somalia, South Africa, Tanzania and Zimbabwe. *Palearctic region*: Spain (Canary Islands).

Material examined. HOLOTYPE [first label, circular with red ring]; E. Cape Prov., Katberg, 11–18.II.1933 [second label]; S. Africa, R.E. Turner, Brit. Mus. 1933–148 [third label]; Holotype, female, *Anacharoides pallidus* Quinlan, det. J. Quinlan, 1977 [fourth label]; nr. eurytergis sp. B [fifth label]; B.M. Type Hym 7–231 [sixth label]. The holotype is a point mounted female in good condition, deposited in BMNH. Note that on the holotype, the species epithet reads '*pallidus*'; the name was changed, presumably at the publication stage, to '*pallida*' for gender agreement purposes.

Additional material. DEMOCRATIC REPUBLIC OF CONGO: Massif Ruwenzori riv. Kakalari, affl. Bombi, 1,725m, 9.VIII.1954, P. Vanschuytbroeck & H. Synave 9952–55 (1 female, MRAC; this specimen is a paratype of *Anacharoides decellius*). KENYA: Rift Valley Province, Mt. Longonot, 5.X.1997, R. Wharton (1 female, TAMU); Nanyuki [00°01'00"N 037°04'00"E] A. Seyrig, VI. 1932 (2 males, MNHN). MADAGASCAR: Province Diego-Suarez, Parc National Montagne d'Ambre el 1125 m, 12–14.V.2001, 12°31'13"S, 49°10'45" E.R. Harin'Hala collector, malaise trap MA-01-01D-10 (1 female, UCRC 56774). SOMALIA: Dabolak, 12.XII.1920, F.4980.b. [?], USNM ENT 00653529 (1 male, USNM). SOUTH AFRICA: KZN, Roadside, W Mooi River 29.12S 29.58E, c. 1500m, 24.VII.1998, Neser, Grobbelaar & Balciunas,

DEL 4.25, collected by hand from *Delairea odorata* (Asteraceae) (1 male, SANCI); Cape Town, G Peringuey, IX.1913, SAM-HYM P002874 (1 female, SAM; NOTE: this specimen is a potential neotype for *Coelonychia rufa* Kieffer); Cape Province, Constantiaberg, Donkerboskloof, 34°02.28'S 18°23.75'E, 370m, 10.III.1995, S van Noort, sweep, Kloof forest, SAM-HYM 24717 (19 females, SAMC); Western Cape, Cape Town, above Tokai Forest, Constantiaberg, first kloof south of Donkerboskloof, 320m, 34°02.18'S 18°23.5'E, 10.III.1995, S van Noort, Kloof forest, sweep, SAM-HYM P020867 (2 females, SAMC); Western Cape, Cape Town, above Tokai Forest, Constantiaberg, first kloof south of Donkerboskloof, 460m, 34°02'S 18°23.5'E, 6.XII.1994, S van Noort, mesic mountain fynbos, sweep, SAM-HYM P005482 (1 male, SAMC); Western Cape, Cape of Good Hope, Nat. Res. Olifantsbos, nr. Skaife Centre, 34°16'S 18°23'E, 18–19.IX.1993, S van Noort, Strandsveld on coast at sea level, SAM-HYM P005230 (1 male, SAMC); Pondoland, Port St. John, 15–31.V.1923, R.E. Turner, Brit. Mus. 1923–332 (1 male, BMNH; identified by J. Quinlan as *A. eurytergis*); Cape Province, Knysna, I.1979, C.D. Eardley, malaise trap (1 male, SANCI); Transvaal, Barberton, XI.1979, C. Eardley (1 male, SANCI); Transvaal, Praetoria, X.1978, C.D. Eardley, Malaise trap (1 male, SANCI); Cape Province, Oudebosch, R. Sonder End, 1500ft., K.H. Barnard, XI-XII.1928, SAM-HYM P002877 (1 male, SAMC); Western Cape, Swellendam, Tradouw Pass, Mus. Exped. XI.1925, SAM-HYM P002877 (1 male, SAMC); Eastern Cape, Hogsback, nr. campsite, 32.36 S 26.56 E, 13.IV.1989, forest sweep, S. van Noort, SAM-HYM P002879 (1 female, SAMC); Stellenbosch, 17.IX.1925, R. I. Nel (1 female, BMNH); Mossel Bay, Cape Province, VIII.1921, R.E. Turner, Brit. Mus. 1921-353 (1 male, BMNH; identified by J. Quinlan as *A. sanitas*); Mossel Bay, R Larner, 27-10-41 [27.X.1941], SAM-HYM P005231 (1 female, SAMC); Cape Province, Mossel Bay, X.1921, R.E. Turner, Brit Mus. 1921-450, USNM ENT 00653609 (1 female, USNM); Cape Province, Ceres, 1500 ft., 1–3.I.1921, Brit. Mus. 1921-39, USNM ENT 00653623 (1 male, USNM); Natal, Merrivale Nr. Howick, 2.VI.1980, P. Joubert (1 female, BMNH; identified by J. Quinlan as *A. decellius*); Natal, Cathedral Peak area, Drakensberg III.1991, I. Pajor, ex syrphid pupa in psyllid gall on *Protea dracontana* (1 male, SANCI, no host remains); Transvaal, Bergvliet Forest Res. Sabie 25.058S 34.54E, 26–28.II.1986, JS Donaldson (1 female, SANCI). TANZANIA: Tanganyika Territory, Ngorongoro, Rest Camp, 2400–2500m, 6–19.VI.1957, Mission Zoolog. I.R.S.A.C. en Afrique orientale, P. Basilewsky and N Lelup (1 male, MRAC; this specimen is a paratype of *Anacharoides astrida*). ZIMBABWE: Salisbury, Chishawasha IX.1979, A Watsham (37 females, BMNH). PALEARCTIC REGION. SPAIN: Canary Islands: Tenerife, Monte Aquirre, 1000m. env., VI Congress INT. d'Entomologie 1935 (2 females, NMHN); Tenerife, Orotava (Jardins de la ville), [28°46'00» N 017°45'00» W] VI Congress INT. d'Entomologie 1935 (1 female, NMHN).

Biology. Circumstantial evidence (host data lacking) suggests this species is a parasitoid of syrphids: one male deposited in SANCI (above) has label data stating "ex syrphid pupa in psyillid gall..."

Image collection: 465352

Comments. The SAMC has one specimen deposited in the collection that may bear Kieffer's original determination of *Coelonychia rufa* Kieffer; this specimen is conspecific with *A. pallida*. If it could be substantiated that Kieffer did indeed identify this specimen, it could be designated a neotype for *Coelonychia rufa* Kieffer (holotype of this species was reported lost by Quinlan (1979)) and *A. pallida* a potential junior synonym of *A. rufa* (Kieffer). At this time, no such nomenclatural act is committed.

Quinlan (1979: figs 74–77) figured *A. eurytergis* Benoit, *A. nigra* Quinlan, *A. decellius* Quinlan and *A. pallida* as all lacking mesoscutal sculpturing; holotypes of the three former species were all examined and determined to belong to *A. striaticeps* (synonymy below). Further, none of these three former species have a shagreened mesoscutum as does *A. pallida*; this observation further underscores how easily these characters can be misinterpreted if lighting is not carefully controlled.

Anacharoides paragi Benoit

Figs 1C, 3A and 7

Anacharoides paragi Benoit, 1956: 200; Quinlan, 1979 (redescribed)

Diagnosis. Most similar to *A. quadrus*, but distinguished by the number of antero-admedial signum struts (3 or more in *A. quadrus*, 2 in *A. paragi*), by the relative length F1 of the female antenna (nearly 2 × length of F2 in *A. paragi*; 1.5 × length of F2 in *A. quadrus*), and by the shape and sculpturing of the mesoscutellar fovea (anteriorly rounded and mostly smooth in *A. paragi*, anteriorly triangular and with more horizontal striae in *A. quadrus*). Distinguished from all other *Anacharoides* by the sculpture of the mesoscutum (shagreened in *A. pallida*, strigate in *A. stygius*, rugose in *A. nicknacki* and *A. striaticeps*).

Redescription. Length = 2.50–3.40 mm, n=11; holotype length = 2.50 mm. F1 of female gradually expanded distally; male unknown. Length of F1 of female antenna 1.8–1.9 × F2. Ocellar groove present, simple ridge posterior to central ocellus. Lateral aspect of pronotum porcate antero-dorsally, antero-ventrally; gently carinate antero-medially; remainder of sclerite shagreened. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present with 2–3 antero-admedial signum struts. Inter antero-admedial signum ridges absent. Surface of mesoscutum rugulose-strigate anteriorly, with distinct carinae, posteriorly shagreened. Shape of posterior mesoscutellar fovea triangular to sub-triangular. Mesoscutal keel present along entire length of mesoscutum, punctate. Mesoscutellar fovea entirely smooth, lacking carinae to 1–2 carinae present anteriorly, smooth posteriorly. Mesoscutellum in lateral view with a slight hump. Length of posterior mesoscutellar fovea short, comprising less than 1/5 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli shagreened with strong carinae present on anterior half. Sculpture of

notauli crenulate with transverse ridges posteriorly. Anterior margin of scutellar fovea rounded; nearly straight. Shape of notauli distinctly wider at posterior margin than anterior margin.

Distribution (Fig. 7). *Sub-Saharan Africa.* Cameroon, Central African Republic, Democratic Republic of Congo, Kenya, Nigeria, Sierra Leone and South Africa; from Quinlan (1979): Ghana and Uganda.

Material examined. HOLOTYPE. Holotypus [first label, pink]; Cyn 1–29 [second label]; Musée de Congo, Gandajika, 22.III.1947, P. Henrard, R. Mayné [Democratic Republic of Congo, third label]; *Anacharoides paragi* sp. n. holotype female, 1955, det. P.L.G. Benoit [fourth label, handwritten]. The specimen is in mediocre condition with the head and mesosoma mounted on a minuten and the metasoma mounted below on a card deposited in MRAC.

Additional material. CAMEROON: Nkoemvon, Mal. tr. I–II.1980, Ms. D Jackson (1 female, BMNH); Nkoemvon, 13.VII–24.VIII.1980, Ms. D Jackson (1 female, BMNH); Nkoemvon, I.1980, D Jackson (1 female, BMNH); Nkoemvon, 23.IX–25.X.1980, D Jackson (1 female, BMNH). CENTRAL AFRICAN REPUBLIC: Prefecture Sangha-Mbéré, Parc National de Dzanga-Ndoki, Mabéa Bai, 21.4km 53° NE Bayanga, 3°02.01'N, 16°24.57'E, 510m, 6–7.V.2001, S van Noort, Malaise trap, CAR01-M60, lowland rainforest, marsh clearing, SAM-HYM P0024997 (1 female, SAMC). DEMOCRATIC REPUBLIC OF CONGO: Massif Ruwenzori riv. Kakalari, affl. Bombi, 1.725m, 12.VI.1954, P. Vanschuytbroeck and H. Synave 8905-08 (1 female, MRAC); Shaba Reg Mufuempa, 4.III.1987, attacking larvae of syrphids, R. Hennessey, Sp. H17 CIE A19122 (1 female, BMNH). KENYA: Western Province, Kakamega Forest, 17–31.VII.2006, Malaise trap, 0°13.66'N, 34°53.12'E, 1630m, in forest, across small stream, behind Rondo Guest House, R. Copeland (1 female, USNM). NIGERIA: Ile-Ife, W State, X. 1973, J.T. Medler, coll. (2 females, BMNH; identified by J. Quinlan as *A. stysius*); Ile-Ife, W State, 4.XII.1968, J.T. Medler, coll. (1 female, BMNH). SIERRA LEONE: Njala, ex syrphid puparium, 2–15.I.1932, E. Hargreaves (1 female, with host remains, BMNH). SOUTH AFRICA: Pondoland, Port St. John,1–14.V.1923, R.E. Turner, Brit. Mus. 1923-307 (1 female, BMNH; identified by J. Quinlan as *A. eurytergis*).

Biology. A specimen deposited in the BMNH from Sierra Leone (above) has an isolated host puparium mounted alongside the adult wasp. This puparium was identified by F.C. Thompson (Smithsonian Institution) as *Paragus* sp. (Syrphidae). Another specimen listed above from the BMNH is labeled as "attacking syrphids"; this specimen lacks host remains.

Image collection: 465353.

Comments. Based on the morphology of the mesoscutum, this species is most likely closely related to *A. quadrus*. The number of antero-admedial signum struts is readily visible in all specimens, though the most anterior strut in some specimens of *A. paragi* is very small and nearly continuous with the admedial signum.

Anacharoides quadrus Quinlan

Figs 1D, 3B and 7

Anacharoides quadrus Quinlan, 1979:101–102
Anacharoides astrida Quinlan, 1979: 97, syn. n.

Diagnosis. Most similar to *A. paragi*, but distinguished by the number of antero-admedial signum struts (2 in *A. paragi*, 3 or more in *A. quadrus*), by the relative length of F1 of the female antenna (1.5 × length of F2 in *A. quadrus*; nearly 2 × length of F2 in *A. paragi*), and by the shape and sculpturing of the mesoscutellar fovea (anteriorly triangular and with more horizontal striae in *A. quadrus*, anteriorly rounded and mostly smooth in *A. paragi*). Distinguished from all other *Anacharoides* by the sculpture of the mesoscutum (shagreened in *A. pallida*, strigate in *A. stygius*, rugose in *A. nicknacki* and *A. striaticeps*).

Redescription. Length = 2.90–3.30 mm, n=14; holotype length = 3.0 mm. F1 of female gradually expanded distally. F1 of male nearly cylindrical, slightly kinked at midpoint, not excavated laterally. Length of F1 of female antenna 1.4–1.5 × F2. Ocellar groove present, simple ridge posterior to central ocellus. Lateral aspect of pronotum porcate antero-dorsally, antero-ventrally; remainder of sclerite shagreened. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present with 2–3 antero-admedial signum struts. Inter antero-admedial signum ridges absent. Surface of mesoscutum rugulose-strigate anteriorly, with distinct carinae, posteriorly shagreened. Shape of posterior mesoscutellar fovea rounded. Mesoscutal keel present along entire length of mesoscutum, punctate. Mesoscutellar fovea smooth with 1–2 carinae present anteriorly, smooth posteriorly. Mesoscutellum in lateral view with a slight hump. Length of posterior mesoscutellar fovea short, comprising less than 1/5 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli shagreened with faint carinae anteriorly. Sculpture of notauli crenulate with transverse ridges posteriorly. Anterior margin of scutellar fovea rounded. Shape of notauli distinctly wider at posterior margin than anterior margin.

Distribution (Fig. 7). *Sub-Saharan Africa*: Cameroon, Democratic Republic of Congo, Nigeria, Rwanda, Uganda, and Zimbabwe.

Material examined. HOLOTYPE: *Anacharoides quadrus*: Holotype [first label, circular with red ring]; RHODESIA [=Zimbabwe], Salisbury, A. Watsham [second label]; Holotype male, *Anacharoides quadrus* Quinlan, det. J. Quinlan, 1977 [third label, hand written]; BM TYPE HYM 7-232 [fourth label]. The holotype is a male, card mounted on the venter, in good condition; deposited in BMNH. HOLOTYPE: *Anacharoides astrida*: HOLOTYPUS [first label]; COLL. MUS. CONGO, RUANDA [=Rwanda]: env. Astrida, 1954/1955, '82', G. Foucart [second label]; Holotype [third label, circular with red ring]; Holotype *Anacharoides astrida* Quinlan, det. J. Quinlan 1978 [fourth label] deposited in MRAC.

Additional material. CAMEROON: Nkoemvon, Mal. tr. I–II.1980, Ms. D. Jackson (1 female, BMNH); Nkoemvon, Mal. tr. IX.1979, Ms. D. Jackson (1 female,

BMNH); Nkoemvon, Mal. tr. 12–29.VIII.1979, Ms. D. Jackson (1 female, BMNH). DEMOCRATIC REPUBLIC OF CONGO: Mont Hoyo, 1280m, 7–15.VII.1955, sur plantes basses, P. Vanschuytbroeck 13274-309 (1 male, BMNH); Shaba Reg, Mufuempa, 4.III.1987, attacking larvae of syrphids, R. Hennessey, sp. H17, CIE A19122 (1 female, BMNH; identified by J. Quinlan as *A. eurytergis*). NIGERIA: Ibadan, 1925, O. Ts. Lean, from *Paragus* cocoon on cotton, USNM ENT 00653525 (1 male, USNM). UGANDA: Mulange, XI.1923, R. Dummer, SAM-HYM P002875 (1 male, SAMC). ZIMBABWE: [Rhodesia] Salisbury, A. Watsham (1 male, BMNH); Chishawasha, nr. Salisbury, II.1978, A Watsham (1 female, BMNH).

Biology. One specimen listed above from the BMNH is labeled as "attacking larvae of syrphids"; this specimen lacks host remains. The label of a second specimen from Nigeria deposited in the USNM (above) records the host as "*Paragus* cocoon on cotton", but lacks host remains.

Image collections: 465422 (*A. astrida*); 465349 (*A. quadrus*).

Comments. As suggested above, based on the morphology of the mesoscutum, this species is most likely closely related to *A. paragi*. The number of antero-admedial signum struts is readily visible in all specimens, though the most anterior strut in some specimens of *A. paragi* is very small and nearly continuous with the admedial signum.

Anacharoides rufa **(Kieffer)**

Coelonychia rufa Kieffer, 1912: 451

The holotype of this species, deposited in MNHN, has been lost (Quinlan 1979; Frank Koch, pers. comm.). As stated under the *Comments* for *A. pallida*, a specimen determined as *Coelonychia rufa* is deposited in SAMC and bears a determination label that may have been written by Kieffer. If it can be established that the SAMC specimen was indeed determined by Kieffer, this specimen may serve as a neotype for *A. rufa* (Kieffer). Further, the SAMC specimen determined as *Coelonychia rufa* is conspecific with *Anacharoides pallida*.

Anacharoides striaticeps **Cameron**

Figs 1E, 4A, 5B and 7

Anacharoides striaticeps Cameron, 1904: 160
Coelonychia spinosipes Kieffer, 1910: 19–20; synonymy by Weld, 1930
Anacharoides elongaticornis Benoit, 1956: 201, syn. n.
Anacharoides eurytergis Benoit, 1956: 195–196, syn. n.
Anacharoides gibbosus Benoit, 1956: 198; synonymy by Quinlan, 1979
Anacharoides arcus Quinlan, 1979: 96–97, syn. n.
Anacharoides decellius Quinlan, 1979: 97–98, syn. n.

Anacharoides nigra Quinlan, 1979: 99–100, syn. n.
Anacharoides sanitas Quinlan, 1979: 102, syn. n.
Anacharoides suspensus Quinlan, 1979: 104, syn. n.

Diagnosis. This species closely resembles *A. nicknacki*, but can be differentiated from that species by the lack of well-developed antero-admedial signum struts (distinctly larger than surrounding rugae in *A. nicknacki*); distinct from *A. pallida* by the presence of rugae over the entire mesoscutum (shagreened in *A. pallida*); distinct from *A. quadrus* and *A. paragi* by the lack of additional antero-admedial signum struts (at least 2 in both *A. paragi* and *A. quadrus*); distinct from *A. stygius* by the lack of horizontal strigae on the mesoscutum.

Redescription. Length = 2.75–3.50 mm, n=60; holotype length = 2.75 mm. F1 of female gradually expanded distally. F1 of male distinctly funicate, markedly kinked at midpoint, distinctly excavated. Length of F1 of female antenna 1.4–1.5 × F2. Ocellar groove present, crenulate ridge posterior to central ocellus. Lateral aspect of pronotum porcate antero-dorsally, antero-ventrally; gently carinate antero-medially; remainder of sclerite shagreened. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present with 2–3 antero-admedial signum struts. Inter antero-admedial signum ridges present. Surface of mesoscutum rugulose-strigate over entire surface, radiating from mesoscutal keel, no distinct strigae. Shape of posterior mesoscutellar fovea triangular to sub-triangular. Mesoscutal keel present along entire length of mesoscutum, rugulose. Mesoscutellar fovea smooth with 7–8 carinae present. Mesoscutellum in lateral view evenly rounded. Length of posterior mesoscutellar fovea medium-long, reaching 1/4 to 1/3 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli coriaceous-rugose with weak carinae anteriorly. Sculpture of notauli smooth with transverse ridges along entire length. Anterior margin of scutellar fovea rounded; nearly straight. Shape of notauli distinctly wider at posterior margin than anterior margin.

Distribution (Fig 7). *Sub-Saharan Africa*: Cameroon, Democratic Republic of Congo, Eritrea, Kenya, Malawi, Nigeria, Rwanda, Senegal, South Africa, Uganda, and Zimbabwe. *Arabian Peninsula*: Yemen. From Quinlan (1979): Ethiopia

Material examined. HOLOTYPE: *Anacharoides striaticeps*: Pearston, S. Af[rica]; Brown [first label]; 22 [second label]; S.Y Feligan, M. Daly, M. Sole [third label, names interpreted from handwriting]; P. Cameron Coll. 1914-110 [fourth label]; type [fifth label, circular with red ring]; B.M. TYPE HYM 7.6 [sixth label]; *Anacharoides striaticeps* Cam., type, Pearston S. Af., Prof. R. Brown [seventh label, handwritten]. The holotype is a female, in mediocre condition, card mounted on the venter, missing the left forewing, right antenna, left hindleg and right midleg deposited in BMNH. HOLOTYPE: *Anacharoides elongaticornis*: HOLOTYPUS [first label], Coll. Mus. Congo, Haut-Uele: Paulis, XII-1947, P.L.G. Benoit [second label], Cyn1–30 [third label], *Anacharoides elongaticornis*, holotype, P.L.G. Benoit, det. 1955 [fourth label]. The holotype is a female, in good condition, pinned through the mesosoma, deposited in MRAC. HOLOTYPE: *Anacharoides eurytergis*: HOLOTYPUS [first label, pink];

Cyn1–25 [second label]; Coll. Mus. Congo, Kivu: Ibanda, 1952, M. Vandelannoite [third label]; *Anacharoides eurytergis* sp. n. holotype female, 1955, det. P.L.G. Benoit [fourth label]. The holotype is in good condition, mounted on a minuten pin, deposited in MRAC. HOLOTYPE: *Anacharoides gibbosus*: HOLOTYPUS [first label, pink]; Cyn1–27 [second label]; Musée du Congo, Rutshuru, 3758, I.1937, J. Ghesquière [third label]; *Anacharoides gibbosus* sp. n., holotype female, 1955, det. P.L.G. Benoit [fourth label]; Det. 8076b [fifth label]. The holotype is in good condition, mounted on a minuten, deposited in MRAC. HOLOTYPE: *Anacharoides arcus*: HOLOTYPUS [first label, pink]; holotype [second label, circular with red ring]; Coll. Mus. Congo, Ruanda: env. Astrida, 82, 1954/1955, G. Foucart [third label]; Holotype *Anacharoides arcus* Quinlan, det. J. Quinlan, 1978 [fourth label, handwritten]. The holotype is a female, in good condition, mounted on a minuten, deposited in MRAC. HOLOTYPE: *Anacharoides decellius*: Holotype [first label, circular with red ring], Natal: Kloof, 1500ft, VIII.1926 [second label], S. Africa, R.E. Turner, Brit. Mus. 1926-350 [third label], Holotype *Anacharoides decellius* Quinlan, det J. Quinlan 1977 [fourth label, handwritten], B.M. TYPE HYM 7.229 [fifth label]. The holotype is in good condition, point mounted on the left side, deposited in BMNH. HOLOTYPE: *Anacharoides nigra*: VIII.1943, T.H.C. Taylor [first label]; Uganda, Kawanda [second label]; Brit. Mus. 1956-25 [third label]; Holotype [fourth label, circular with red ring]; Holotype *Anacharoides nigra* Quinlan, det. J. Quinlan 1977 [fifth label, handwritten]. The holotype is a female, in good condition, point mounted on the right side, deposited in BMNH. HOLOTYPE: *Anacharoides sanitas*: Holotype [first label, circular with red ring]; Mossel Bay, Cape Province, October 1921 [second label]; S. Africa, R.E. Turner, Brit. Mus. 1921-450 [third label]; *Anacharoides sanitas* Quinlan, det. J Quinlan 1977 [fourth label, handwritten]; B.M. TYPE HYM 7.233 [fifth label]. The holotype is a female, in average condition, card mounted, with the left midleg disarticulated and glued to the card; deposited in the BMNH. HOLOTYPE: *Anacharoides suspensus*: Holotype [first label, circular with red ring]; Senegal, Bambey, J. Risbec, ex *Ischiodon aegypticum* [second label]; Holotype *Anacharoides suspensus* Quinlan, det. J. Quinlan 1977 [third label, handwritten]; B.M. TYPE HYM 7.234 [fourth label]. The holotype is in good condition, point mounted on the left side, deposited in BMNH.

Additional material. AFRICA. CAMEROON: Nkoemvon, Mat. tr. XI.1979, Ms. D. Jackson (1 female, BMNH). DEMOCRATIC REPUBLIC OF CONGO: Secteur Tshiaberimu, Riv. Mbulikerere, affl. dr. Talia N, 2720m, 26–28.VIII.1953, P. Vanschuytbroeck and V Hendrickx 4999–5005 (2 females, one paratype specimen of *A. niger*, MRAC, non-type BMNH); Secteur Nord, Riv. Butahu, affl. Semliki, 1420m, 26.VI.1957, P. Vanschuytbroeck VS 62 (1 female BMNH); Mont Hoyo, 1280m, sur plantes basses, 7–15.VII.1955, P. Vanschuytbroeck, 13274-309 (1 female, BMNH). ERITREA: Asmara, II–5–1962, R. Van den Bosch (1 female, UCRC 197005). KENYA: Lake Nakuru, Hippo Point, 16.XII.1970, A.E. Stubbs, BM 1972-211 (1 female, BMNH); Tsavo East, VI.1977, J. Wirth [illegible] (1 female, BMNH); Chyula Hills, 1–3.VI.2006, R. Copeland, MT, USNM ENT 00653527, 00653513 (2 females, USNM). MALAWI: Kasungu, Mtunthama, V.1982, J. Feehan (2 males, 2 females,

BMNH); Kasungu, Mtunthama, VII.1982, J. Feehan (3 females, 1 male, BMNH). NIGER: Maradi, INRAN, II. 1986, G.J. Steck (2 males, TAMU). NIGERIA: Owena, W. State, 15.II.1970, Col. J.T. Medler (1 female, BMNH. RWANDA: Lac Bulero (Bitale) 1862 m.10 au 11.IX.1934, G.F. de Witte: 583 (1 female, MRAC). SOUTH AFRICA: GAU, PPRI Rietondale Experiment Centre 25.44S, 28.13E, 26.V–2. VI.1998, T Bird, from pitfall traps (1 female, SANCI); East Cape Province, Katberg, 1–10.II.1933, R.E. Turner, Brit. Mus. 1933-139 (1 male, BMNH); Cape Province, Mossel Bay, V.1930, R.E. Turner, Brit. Mus. 1930-266 (1 male, BMNH); Kwazulu-Natal, Karkloof, Leopards Bush Nature Res., 19km 25°NNE Howick, 1350m, 29°18.9'S, 30°15.3'E, S van Noort, KN98/S36, 29.VIII.1998, sweep Afromontaine forest, SAM-HYM P025006 (7 females, SAMC); Kwazulu-Natal, Good Hope Estate, 9.3km 281° NW Boston, 1350m, 29°41.7'S 29°55.9'E, BL Fisher 1791(1), 25.VIII.1998, Winkler bag extraction of leaf litter, Afromontane Forest, SAM-HYM P025008 (2 females, SAMC); Kwazulu-Natal, Good Hope Estate, 9.3km 281° NW Boston, 1350m, 29°41.7'S 29°55.9'E, S van Noort, 25.VIII.1998, KN98/S2, sweep of Afromontaine Forest, SAM-HYM P025000. UGANDA: Kampala, 24.X.1921, H. Hargreaves, 'parasite on syrphid larval predator of psyllid 7083 (1 female, BMNH); Teso. [?] 7.X.1926, ex syrphid *Ischiodon* sp. (1 male, BMNH). ZIMBABWE: [Rhodesia] Salisbury, R.W.E. Tueker, V.1917, SAM-HYM P002876 (1 male, SAMC); Chishawasha, X.1978, A. Watsham (1 male, BMNH); Chishawasha, X.1979, A. Watsham (3 female, BMNH); Chishawasha, IX.1979, A. Watsham (1 male, 1 female, BMNH); Chishawasha, I.1980, A. Watsham (1 male, BMNH); Chishawasha, II.1979, A. Watsham (3 male, 1 female, BMNH); Chishawasha, III.1980, A. Watsham (1 female, BMNH). ARABIAN PENINSULA. YEMEN: Usaifira, 1 mile N. of Ta'izz, ca. 4500ft., 12.XII.1937, in cultivated fields, BM Exp. to SW Arabia, H. Scott and E.B. Britton, BM 1938-246 (1 female, BMNH).

Biology. Two specimens from SANCI are associated with isolated host puparia that were identified by F.C. Thompson (Smithsonian Institution) as belonging to *Ischiodon aegyptius* (Weidemann). Label data on another specimen, collected in Uganda and deposited in the BMNH, reads "parasite on syrphid larval predator of psyllid"; another specimen in the BMNH collected in Uganda has label data recording the host as "*Ischiodon* sp."; these specimens lack host remains. A third specimen, collected in Senegal and deposited in the BMNH, reads "ex *Ischiodon aegypticum*"; this specimen lacks host remains.

Image collections: 465494 (*A. arcus*); 465423 (*A. decellius*); 465421 (*A. elongaticornis*); 465493 (*A. eurytergis*); 465492 (*A. gibbosus*); 465395 (*A. nigra*); 465393 (*A. sanitas*); 465420 (*A. striaticeps*); 465419 (*A. suspensus*).

Comments. Quinlan (1979) described six species that, in the present work, are considered synonyms of *A. striaticeps*. As with *A. pallida*, the morphology of this species is particularly difficult to interpret if insufficient lighting is used. Two key character systems employed by Quinlan (1979) are the sculpture of the mesoscutum and the shape of the scutellar acetabulum (referred to as the 'apical depression of the scutellum'). In the case of the mesoscutal morphology, directional and non-directional light will reveal very

different character states on the same specimen; careful examination of the mesoscutum of Quinlan's (1979) holotypes revealed that several species described in that work were merely representing the morphological variation within *A. striaticeps*. A similar situation occurs with the scutellar acetabulum: the shape of the anterior and posterior margins of this structure vary from distinctly round to nearly straight, in the same specimen, solely dependent upon examination angle. In the preparation of the present study, this character was originally employed only to be excluded upon the discovery of this artifact.

Anacharoides stygius **Benoit**

Figs 1F, 4B and 7

Anacharoides stygius Benoit, 1956: 197–198

Diagnosis. This species is immediately recognizable by the 5–7 well-developed strigae present on the mesoscutum (Fig. 1F); other species of *Anacharoides* have, at most, a rugose-striate mesoscutum, lacking any distinctive strigae.

Redescription. Length = 2.80–3.00 mm, n=8; holotype length = 3.00 mm. F1 of female gradually expanded distally. F1 of male distinctly funicate, markedly kinked at midpoint, distinctly excavated. Length of F1 of female antenna 1.2–1.4 × F2. Ocellar groove present, simple ridge posterior to central ocellus. Lateral aspect of pronotum porcate antero-dorsally, antero-ventrally; gently carinate antero-medially; remainder of sclerite shagreened. Microsculpture of mesoscutum coriaceous over entire surface. Antero-admedial signum of mesoscutum present with 2–3 antero-admedial signum struts. Inter antero-admedial signum ridges present. Surface of mesoscutum strigate, with 5–7 distinct strigae radiating from mesoscutal keel. Shape of posterior mesoscutellar fovea rounded. Mesoscutal keel present along entire length of mesoscutum, punctate. Mesoscutellar fovea smooth with 6–7 carinae present. Mesoscutellum in lateral view with a distinct, strong hump. Length of posterior mesoscutellar fovea medium-long, reaching 1/4 to 1/3 length of mesoscutum. Lateral aspect of mesoscutum distal of notauli coriacous-rugose with strong carinae along entire length. Sculpture of notauli crenulate with transverse ridges posteriorly. Anterior margin of scutellar fovea rounded. Shape of notauli distinctly wider at posterior margin than anterior margin.

Distribution (Fig. 7). *Sub-Saharan Africa*: Angola, Democratic Republic of Congo, Madagascar; from Quinlan (1979): Tanzania and Nigeria.

Material examined. HOLOTYPE. Holotypus [first label, pink]; Cyn 1–36 [second label]; Musée de Congo, Kiniati-Zobe, fin December 1915, R. Mayné [Democratic Republic of Congo, end December 1915, third label]; *Anacharoides stygius* sp. n. 1955, holotype, female, det. P.L.G. Benoit [fourth label, handwritten]. The holotype is a female, card mounted, in good condition; deposited in MRAC.

Additional material. ANGOLA: 7 mls. W Gabela, 16–18.III.1972, Southern African Exped. B.M. 1972-1 (1 female, BMNH). DEMOCRATIC REPUBLIC

OF CONGO: Massif Ruwenzori Kalonge, 1900 m, Kamusonge River, aff. Butahu, 8.I.1954, H. Synave 7026-31 (1 female, BMNH); Mont. Hoyo, 1280 m, sur plantes basses, 7–15.VII.1955, P. Vanschuytbroeck 13274-309 (1 female, BMNH). MADAGASCAR: Berenty Reserve, 80km W Ft. Dauphin, 25°00'S 46°18'E, 3.III.1994, M. Wasbauer, MT (1 female, UCD); Province Fianarantsoa, near Isalo National Park, in dry wash East of Interpretive Center, 7–22.IX.2002, 22°37.60'S, 45°21.49'E, collector: R. Harin'Hala, California Acad of Sciences, malaise trap in open area, elev 885 m, MA-02-11B-39 (1 male, CASC); Province Fianarantsoa, Parc National Ranomafana, radio tower at forest edge, elev 1130 m, 17–30.V.2003, 21°15.05'S, 47°24.43'E, collector: R. Harin'Hala, California Acad. of Sciences, malaise, mixed tropical forest, MA-02-09B-61 (1 female, CASC); Bekily [19°48'00"S 045° 03'00"E] Reg. Sud. D'Lile, A. Seyrig, various dates, all deposited in NMHN: 7 females, 3males: III.1937; 2 females: I.1937; 1 females: II.1937; 2 females: IV.1937; 3 females: X.1936; 1 female, 1 male: VII.1936; 2 females, 1 male:IX 1938; 3 females, 2 males: X.1938; 1 female: III.1939.

Biology. Unknown.

Image collection: 465418.

Comments. The sculpture of the mesoscutum is a striking feature of this species, exemplified by Fig. 4B and Quinlan (1979: fig 64).

Conclusion

The distribution of *Anacharoides striaticeps* and *A. pallida* are by far the broadest of any species within the genus. Consistent with other species of *Anacharoides*, *A. striaticeps* and *A. pallida* have been collected throughout sub-Saharan Africa; these species differ from their congeners, however, by their presence in Sudan, Eritrea, Yemen (*A. striaticeps*) and the Canary Islands (*A. pallida*). This distribution data is consistent with that of other figitids: the pycnostigmines *Tylosema* Kieffer and *Trjapitziniola* Kovalev were both recorded from beyond sub-Saharan Africa (*Tylosema* recorded from Algeria, *Trjapitziniola* from the United Arab Emirates and Armenia (Buffington and van Noort 2007; Kovalev 1995), and the eucoilines *Gronotoma nitida* Quinlan, *G. lana* Quinlan and *Nordlanderia plowa* Quinlan occur in Africa as well as the Arabian Peninsula, India and southeast Asia (Buffington, pers. obsv.). Thus, the distribution of both *A. striaticeps* and *A. pallida* reinforces the notion that at least some African lineages of Cynipoidea are derived from Western Palearctic lineages. This hypothesis is further underscored by the relationship of *Anacharoides* with the aspicerines *Omalaspis* and *Callaspidia* as reported in Buffington et al. (2007): ((*Aspicera*+*Paraspicera*)*Anacharoides*(*Omalaspis*+*Callaspidia*)). *Omalaspis* is known from India and Bangladesh (Buffington, pers. obsv.) and the western Palearctic (Weld 1952); *Callaspidia* is known throughout the western Palearctic and Nearctic (Weld 1952). Thus, from a cladistic biogeography standpoint, a western Palearctic origin of *Anacharoides* is likely.

The few host records reported here that are substantiated by host remains suggest species of *Anacharoides* are parasitoids of syrphids. This biological attribute is consistent with other species of Aspicerinae such as *Callaspidia* that similarly have been recorded

as parasitoids of Syrphidae (Weld 1952; Ros-Farré 2007). In fact, insects with aphidophagous larvae have been considered a loose host association for the entire Aspicerinae, Anacharitinae and Charipinae (Ronquist 1999), though Buffington et al. (2007) found that this biological attribute likely evolved several times. For agroecosystems, species such as those in *Anacharoides* may provide a degree of antagonism towards primary predators and parasitoids of pestiferous aphids. Further research into this group of parasitic wasps will hopefully yield more data on the nature of this interaction.

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